CITY OF SAN ANTONIO

DEPARTMENT OF PLANNING AND DEVELOPMENT SERVICES

TO: Sheryl Sculley, City Manager

FROM: Roderick J. Sanchez, AICP, CBO, Director of Planning and Development Services

SUBJECT: The Hills of Rivermist Retaining Wall

DATE: February 4, 2010

The purpose of this memorandum is to provide you with my findings on the retaining wall failures and slope stability failures at the Hills of Rivermist. In addition, this memorandum informs you of my decision to not accept the current retaining wall structure as a component of the ultimate engineered solution for stabilizing the slopes and for protecting the properties and homeowners in the area.

Centex/Pulte Failed to Obtain Permits. In Section 105 of both the *International Residential Code* and the *International Building Code,* a permit is required prior to any property owner or authorized agent constructing a retaining wall that is greater than 4 feet in height when measured from the bottom of the wall's footing to the top of the wall. It has been determined that the retaining walls in question were erected without the required permits in violation the aforementioned codes. Furthermore, it has been determined that third-party inspections, to be performed by a professional engineer to determine the proper construction of the wall, were not performed.

Retaining Wall Not Built as Designed. In reviewing the breached portions of the failed wall, the proposed wall design prepared by Mr. Russell W. Leavens, P.E., and the photographs of the wall foundation prior to and during placement of concrete that were provided to me by the wall contractor, Gravity Walls, Ltd., my staff and I have determined the retaining wall was not constructed in accordance with the retaining wall design and specifications. Specifically, the following elements of the design were not found to be in compliance:

- A critical part of the retaining wall's foundation - a vertical reinforced concrete sheer key that is part of the concrete foundation and was required to be a minimum of 36 inches below the foundation plane along the entire length of the wall was found to either not have been formed prior to the placement of concrete or it was found to be less than 16 inches in depth. A sheer key resists horizontal pressure and prevents horizontal movement of the wall's foundation. This determination is based on my study of the photographs provided.
- An 18 inch wide vertical wall of crushed limestone that was to be wrapped with a geotextile fabric and that was designed to be constructed between the grouted-in-place stone wall and the backfill soil was not found to have been installed. This critical design element is necessary for the proper drainage of water that may accumulate behind the retaining wall.
- The stone wall was to consist of solid mortar joint, stacked, clean, rubble cut limestone for the entire depth and height of the retaining wall. The limestone at the outer face of the wall was found to be properly mortared to a depth that varied from 12 inches to no more than 24 inches. The remaining depth of the wall was found to have little to no mortar with many of the stones dry stacked in place.
- The horizontal dimension at the top of the wall had been reduced to a final dimension of approximately 12 inches by providing a notch at the top rear of the wall. This would reduce the weight and mass of the wall and would not be in accordance with the engineered plans.

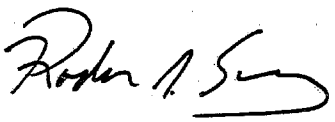
The City's independent structural engineer, Mr. Davy L. Beiker, P.E., of Beiker Martinez Engineering, performed an on-site inspection of the retaining wall and reviewed the photographs taken during construction and the breached portions of the wall and is in agreement with our findings.

City's Position: There are multiple reasons why the wall may have failed. It may have been one or a combination of the following reasons:

- Design failure in that the wall was never properly designed in the first place.
- Construction failure in that the wall was not built in accordance with the engineered plans and specifications (this determination has been made in the portions observed).
- Slip failure of the soil strata below the wall.

I have asked Centex/Pulte for a proposed solution and time frame that may allow residents to return to their home. In addition, I advised Centex/Pulte that the City will not accept any solution involving the retaining wall in its current state.

We continue to monitor the site and to work closely with all engineers associated with this project. I will keep you abreast of all changes and new information as they occur.



Roderick J. Sanchez, AICP, CBO
Director of Planning and Development Services